REMARKS

This case contains claims 1-23. Claims 1 and 18 have been amended to better claim the subject matter which Applicants regard as the claimed invention. Claims 11 and 14 have been amended for improved clarity. Claim 12 has been amended to correct the antecedent basis, i.e., the particles recited in the amended claim 1 are antigenic particles not virus particles. Claim 15 has been amended to correct typographical errors. None of the amendments made herein constitutes the addition of new matter.

Claim Objections:

Claim 15 is objected to due to a typographical error. This error has been corrected in the amended claim 15.

Claim Rejections under 35 USC §112:

Claims 9 and 14 are rejected under 35 USC §112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Applicants respectfully traverse this rejection.

The rejection of claim 9 is based on the use of a phrase, "virus-like particles". Applicants submit that the term, virus-like particles (VLPs), is a well-known and frequently used term in the art that does not require a special definition in the present application. A person of ordinary skill in the art readily understands that the virus-like particles (VLPs) are particles that resemble virus particles but unlike the virus particles VLPs are typically non-replicating and non-infectious while retaining intact immunogenic antigens. To illustrate the common usage of this term as understood by a person of ordinary skill in the art, copies of two Internet articles are enclosed herewith as Exhibits A and B. This term is used exactly as is understood to the art in the present application. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 14 is rejected because the phrase, "a virus of interest", allegedly renders the claim indefinite. Without acquiescing to this aspect of the rejection and in the interest of advancing the prosecution of this case, this phrase has been replaced with "another virus" in amended claims 11 and 14. This phrase was recited to indicate that the mixed infection is carried out between an orthomyxovirus (or a paramyxovirus) and a virus that is not an orthomyxovirus (or a

paramyxovirus), i.e., mixed. Applicants submit that the amended claims are considered to be clear and definite.

Based on the foregoing amendments and remarks, applicants request that the rejection under 35 USC §112, second paragraph, be withdrawn.

Rejection under 35 U.S.C. §103:

Claims 1-23 are rejected under 35 USC §103(a) as allegedly unpatentable over Glenn et al. (USPN 5,980,898). Applicants respectfully traverse this rejection.

Without acquiescing to this aspect of the rejection and in the interest to advance the prosecution of this case, claims 1 and 18 have been amended for improved clarity and to better claim the subject matter which Applicants regard as the invention.

The claimed invention is a noninvasive, economical and easy method for inducing an immune response against a particulate antigen, i.e., transcutaneous administration of the particulate antigen such as a virus particle that has been inactivated or attenuated. The claimed method solves a major problem of inefficient immune response, in particular, against larger antigens, that has prevented the use of skin as a site of immunization. There is no need to use an adjuvant such as an ADP-ribosylating endotoxin in practicing the claimed method. A simple composition of antigenic particles (i.e. virus particles) and a pharmaceutically acceptable carrier such as phosphate buffered saline is sufficient to produce neutralizing antibodies as disclosed at pages 10-11 in the Specification, Examples 1-3. This is the first demonstration that the transcutaneous immunization of antigenic particles (influenza virus particles) of approximately 250,000 kDa in weight and a diameter of 100nm can provide immune protection without the aid of an adjuvant. Claims 1 and 18 have been amended to capture the novel aspect of the invention.

In contrast, Glenn et al. teaches the use of an adjuvant, preferably an ADP-ribosylating endotoxin, to increase the efficiency of transcutaneous immunization. Glenn et al. states that the antigen may be derived from a pathogen that can infect the organism (e.g.., bacterium, virus, fungus or parasite). However, an adjuvant is an essential component of the method taught by Glenn et al to induce immune response by transcutaneous route regardless of what the antigen is.

Applicants maintain that the claimed method of inducing immune response is not *prima facie* obvious over the teaching of Glenn et al. The present application teaches for the first time that a particulate antigen of a large size (e.g., virus particles) can be used transcutaneously to induce immune response without the use of an adjuvant. There is no such teaching in the Glenn et al. patent. Claims 1 and 18 as amended specifically recite this feature. Therefore, withdrawal of the rejection under 35 USC §103(a) is respectfully requested.

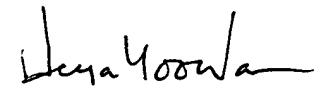
Conclusion

Based on the foregoing amendments and arguments, it is believed that this case is in condition for allowance. Passage to issuance is respectfully requested.

If there are any outstanding issues related to patentability, the courtesy of a telephone interview is requested, and the Examiner is invited to call to arrange a mutually convenient time.

This amendment is accompanied by a Petition for Extension of Time (two months) and a check in the amount of $200.00 as required under 37 C.F.R. 1.17(a)(2) for a small entity. If the amount submitted is incorrect, however, please charge any deficiency or credit any overpayment to Deposit Account No. 07-1969.

Respectfully submitted,



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1. (Once amended) A method for inducing an immune response comprising the step of applying to the unbroken surface of the skin a composition [comprising] consisting essentially of antigenic particles and a pharmaceutically acceptable carrier. [, wherein said composition does not also comprising cholera toxin or a cholera toxoid protein.]

11. (Once amended) The method of claim 10 wherein the sialic acid binding component is incorporated into the particles by mixed infection with an orthomyxovirus or a paramyxovirus and [a virus of interest] an another virus.

12. (Once amended) The method of claim 1 wherein the [virus] antigenic particles are mixed virus particles comprising a sialic acid binding component which is heterologous to the virus.

14. (Once amended) The method of claim 12 wherein the sialic acid binding component is incorporated into the particles by mixed infection with an orthomyxovirus or a paramyxovirus and [a virus of interest] an another virus.

15. (Once amended) The method of claim 12 wherein the virus particles are noninfectious particles of parainfluenza virus, hepatitis C virus, hepatitis B virus [B], measles virus, vaccinia virus, herpes virus or respiratory [synctium] syncytium virus.

18. (Once amended) A method for inducing an immune response comprising the step of applying to the unbroken surface of the skin a composition [comprising] consisting essentially of live virus particles and a pharmaceutically acceptable carrier. [, wherein said composition does not also comprise cholera toxin.]